

Farm to Fork Curriculum



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The Farm to Fork Lab Kit is a complete kit for teaching a one-week unit on farm-to-table principles using a variety of lab activities. This curriculum helps participants learn about important farm-to-table principles in each step of the process.

Curriculum Structure

The *Farm to Fork Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Production of Goods	60-80 minutes
Two	Processing Agricultural Products	80 minutes
Three	Transporting Food to a Regional Distribution Center	70 minutes
Four	Shipping Produce to Local Retail Stores	80 minutes
Five	Food Ending Up on Your Plate	125 minutes
	Total	7 hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table, which lists lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which contains some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, a game, a demonstration, or a review of previous lesson information. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Production of Goods

Lesson Overview

Use this lesson to introduce the common types of insects seen in a field setting and learn how to identify them. Furthermore, participants will understand the impact that these field insects can have on crop production.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify 8 common field insects
- Explain damage done by each insect to common food crops
- Understand the impact these insects can have on total yield

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Field Insect</i> slide presentation • Field Insect Models	1. Prepare <i>Field Insect</i> slide presentation for viewing. 2. Have the insect models out where students can see them.	10 minutes
LEARN	• <i>Field Insect</i> slide presentation • Field Insect Models • <i>Field Insects Note Page</i> • <i>Field Pest-Introduction</i>	1. Prepare <i>Field Insect</i> slide presentation for viewing. 2. Print/photocopy <i>Field Pest-Introduction</i> (one per group). 3. Print/photocopy <i>Field Insects Note Page</i> (one per participant).	40-60 minutes
REVIEW	• Field Insect Models • <i>Insect Review Game Questions</i> • Small whiteboards with dry erase markers and microfiber cloths	1. Have the <i>Insect Review Game Questions</i> out and ready. 2. Have a whiteboard, marker, and cloth for each group.	10 minutes

Lesson One – Production of Goods

FOCUS: Introduction to Field Insects

10 minutes

Purpose:

Participants work in groups to identify their assigned insect and, most importantly, the impact that this field pest has on production.

Materials:

- *Field Insect* slide presentation
- Field Insect Models

Facilitation Steps:

1. Open the *Field Insect* slide presentation and only show slide 2.
2. Allow students time to look at the pictures and question at the top.
3. Facilitate discussion on what they think about those pictures.
4. Share that they will be learning about the impact that insects can have on crops and production of goods in the end.
5. Have the Field Insect Models set up on a table and divide the class into 8 small groups.
6. Give each group one of the insects and set a timer for 5 minutes using a cell phone or an online timer like this:
<https://www.timeanddate.com/timer/>
Students will have this time to try figuring out in their group what insect they have. They can use the internet to look at photos if needed.
7. Call the class back together.
8. Have each group hold up their insect and put forth their best guess at what it is. Confirm with them whether they have it correct or not. If not, identify the insect.

Lesson One – Production of Goods

LEARN: Insect Presentations

40-60 minutes

Purpose:

Participants learn how to identify the crop insect and damage they cause.

Materials:

- *Field Insect* slide presentation
- Field Insect Models
- *Field Insects Note Page*
- *Field Pest-Introduction*

Facilitation Steps:

1. After each insect is correctly identified, the group will prepare a brief oral presentation about their insect to the class. Give each small group *Field Pest Introduction*.
2. Allow 10 minutes for participants to research information for their oral presentation and write notes on the *Field Pest Introduction*. Each group should also assign members to share various data points from their notes.
3. Distribute the *Field Insects Note Page* (one per person). This will serve as a graphic organizer for participants to take notes on during the presentations.
4. Have each small group give their brief oral presentation about their assigned crop insect. Remind participants to capture important information on the notes page.
5. Review these sections by sharing the *Field Insect* slide presentation if time permits. Remind participants to take additional notes if they missed anything from the oral presentations.

Have the Field Insect Models out so you can hold one up when each insect is introduced in the slide presentation.

Field Pest Introduction

Task: Identify your assigned pest and create a short oral presentation on the impact that this field pest has on crop production.

Step One: Research using the internet and any other sources provided by your teacher.

We have a _____. (identify the field pest your group has)

Step Two: Create a short oral presentation with the following information:

Information	Notes for your presentation
Name: common, scientific	
Identification: size, color, etc.	
Damage caused to plants	
Food crops impacted	

Field Insects Note Page

Task: Take notes in the space provided during participant presentations and the slide presentation.

#1	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	
#2	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	

Food crops impacted	
#3	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	
#4	Student Notes
Insect Name	
Identification / Description	

Damage caused to plants by this pest	
Food crops impacted	
#5	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	
#6	Student Notes
Insect Name	

Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	
#7	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	

#8	Student Notes
Insect Name	
Identification / Description	
Damage caused to plants by this pest	
Food crops impacted	

Lesson One – Production of Goods

REVIEW: Insect Review Game

10 minutes

Purpose:

Participants prove their ability to identify the crop insect.

Materials:

- Field Insect Models
- *Insect Review Game Questions*
- Small whiteboards

Facilitation Steps:

1. Keep small groups from the oral presentation the same for the Insect Review Game. Give each small group a whiteboard with dry erase marker and microfiber cloth.
2. Using the insect models and questions on *Insect Review Game Questions* ask participants a question.
3. The small groups should discuss and identify an answer, writing it on the whiteboard. The first group to stand up and turn over the whiteboard showing the correct answer gets 1 point.
4. Ask enough questions until a team gets to 10 points (or a value decided) first to win.
5. If time permits share this short, 1-minute video: [Insects Can be Harmful to Crops](#)

Insect Review Game Questions

1. Which insect impacts greenhouses and container plants more than crops? **Fungus gnat**
2. Which insect is gray/white and wingless? **mealy bug**
3. Which insect has 4 wings with a center vein? **thrip**
4. Which insect prefers new growth, and their feeding causes the leaves to curl? **aphid**
5. Which insect can easily become pest resistant? **spider mite**
6. Which insect can be identified by two black spots on the abdomen? **spider mite**
7. Which insect feeds on plant sap preferring woody plants like perennials and citrus? **mealy bug**
8. Which insect causes damage to leafy vegetables? **leaf miner**
9. Which insect is like a fungus gnat, but with short antennae? **shore fly**
10. Which insect is soft bodied and green? **aphid**
11. Which insect likes to hang out on the underside of the plant leaves? **white fly**
12. Which insect impacts avocado, citrus, grapes, and onions? **thrip**
13. Which insect likes to be around the soil surface while the larvae feed on plant roots? **fungus gnat**
14. Which insect is white with two wings? **white fly**
15. Which insect does only cosmetic damage to crops? **shore fly**
16. Which insect can be white, yellow, red (pink), brown, black, or mottled? **aphid**
17. Which insect larva cause damage and are light green? **leaf miner**
18. Which TWO insects leave a "honeydew"? **mealy bug and aphid**
19. Which insect is tiny and hardly visible? **spider mite**
20. Which insect impacts the avocado, citrus, cucumber, tomato, and eggplant? **white fly**
21. Which insect causes white or silver blotches on leaves or fruits? **thrip**

Lesson Two – Processing Agricultural Products

Lesson Overview

Use this lesson to identify the different places and situations where food might be contaminated in processing.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify environments for food contamination
- Explain the ways contamination occurs when processing food

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Various physical common food items (e.g., apple, bread, lettuce, cheese, chicken breast, etc.) • Whiteboards or poster paper • Markers	1. Gather various physical common food item.	15 minutes
LEARN	• <i>Processing Agricultural Products</i> slides presentation • ½-teaspoon agar (1-1/5 grams) per 2 petri dishes • ¼ cup (60 milliliters) of hot water per 2 petri dishes • Microwave-safe container • Microwave • Cotton swabs • <i>Food Contamination Data Analysis</i> • <i>Growing Bacteria in Petri Dishes – Experiment Instructions</i>	1. Print/photocopy <i>Food Contamination Data Analysis</i> and <i>Growing Bacteria in Petri Dishes – Experiment Instructions</i> (one per participant). 2. Prepare <i>Processing Agricultural Products</i> slide presentation for viewing. 3. Prepare petri dishes with agar mixture.	45 minutes
REVIEW	• <i>Experiment Analysis</i>	1. Print/photocopy <i>Experiment Analysis</i> (one per participant).	20 minutes

Lesson Two – Processing Agricultural Products

FOCUS: What Is Food Processing?

15 minutes

Purpose:

Engage in understanding the process and transformations that common food items undergo from the field to their plate. By exploring the journey of food, participants will develop an appreciation for the various steps involved in food production and distribution.

Materials:

- Various physical common food items (e.g., apple, bread, lettuce, cheese, chicken breast, etc.)
- Whiteboards or poster paper
- Markers

Facilitation Steps:

1. Begin by engaging participants in a discussion about their favorite foods. Ask participants to share their thoughts on where they think their food comes from and what happens to it before it reaches their plate.
2. Distribute the physical common food items among participants or display them in the front of the class. If physical food items cannot be shared, obtain a photo of the food item.
3. Divide participants into small groups and assign each group a different food item to investigate. Instruct the groups to research and discuss the various stages involved in bringing their assigned food item from the field to their plate.
4. Each group should create a flowchart or diagram to illustrate the journey of their assigned food item, highlighting the key steps and transformations.
5. Allow each group to present their findings and share their flowchart with the rest of the class. Encourage participants to discuss the challenges associated with each stage of the food journey.

Lesson Two – Processing Agricultural Products

LEARN: What Contaminants Are in Different Environments?

45 minutes plus a few days for observation

Purpose:

Participants explore how food contamination can occur during food processing. By examining different stages of processing, we aim to identify sources and factors that contribute to foodborne contamination.

The findings will help develop strategies to mitigate contamination risks and ensure food safety.

Materials:

- *Processing Agricultural Products* slide presentation
- ½ teaspoon agar (1-1/5 grams) per 2 petri dishes
- ¼ cup (60 milliliters) of hot water per 2 petri dishes
- Microwave
- Microwave-safe container
- Cotton swabs
- *Food Contamination Data Analysis*
- *Growing Bacteria in Petri Dishes – Experiment Instructions*

Facilitation Steps:

1. Teacher Prep:
 - Prepare the agar in the quantity of petri dishes needed for your group. For every 2 petri dishes, you will need a ratio of ½ teaspoon agar (1-1/5 grams) and ¼ cup (60 milliliters) of hot water.
 - Boil the agar mixture of 3 minutes to completely dissolve the agar.
 - Cool for 3-5 minutes.
 - After the mixture has cooled, fill the petri dish half full.
 - Allow the mixture to completely cool for an hour to ensure it has set. If there is any extra,

you can reheat the agar mixture in the microwave and pour it again.

2. Go through the *Processing Agricultural Products* slide presentation. Encourage participants to mentally note all the possible places/ways contamination occurs.
3. Give each participant the *Food Contamination Data Analysis* and the *Growing Bacteria in Petri Dishes – Experiment Instructions*.
4. Lab Procedure:
 - Start by thinking about environments food is in while being processed. Think outside the box and test thinking like food containers, product drawers, vegetable crates/boxes, etc.
 - Divide the class into 10 groups. Give each group a minimum of 2-3 prepared petri dishes. Once you have a surface to test, label the petri dishes with the location, date, and group. You need to have 1 petri dish per location tested. Have groups choose from a variety of environments if possible.
 - Have participants take a cotton swab and gently rub it over the surface being tested a few times. Open the petri dish and gently rub the swab back and forth along the agar.
 - Make sure the lid is closed and discard the cotton swabs. Repeat this procedure for each petri dish and environment tested.
 - Keep the petri dish in a warm and dark location. Warmer temperatures will increase the speed any bacteria grows. Each class period (3-5 days), record the data on the *Food Contamination Data Analysis*.

Name: _____ Class: _____

Food Contamination Data Analysis

Group Members: _____

Location Tested: _____

Data Recorded: Write out your observations and draw a picture below

Day 1:

Observation:

Day 2:

Observation:

Day 3:

Observation:

Day 4:

Observation:

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Day 5:

Observation:

Conclusions:

Growing Bacteria in Petri Dishes – Experiment Instructions

Lab Procedure:

1. Start by thinking about environments food is in while being processed. Think outside the box and test things like food containers, produce drawers, vegetable crates/boxes, etc.
2. Once you have a surface to test, label the petri dishes with the location, date, and group. You need to have 1 petri dish per location tested.
3. Take a cotton swab and gently rub it over the surface being tested a few times. Open the petri dish and gently rub the swab back and forth along the agar.
4. Make sure the lid is closed and throw away the cotton swab. Repeat this procedure for each environment.
5. Keep the petri dish in a warm and dark location. Warmer temperatures will increase the speed any bacteria grows. Each class period (3-5 days), record the data on *Food Contamination Data Analysis*.

Lesson Two – Processing Agricultural Products

REVIEW: Data Analysis

20 minutes

Purpose:

To analyze experiment results and compare those results across groups to get a larger picture of potential contamination.

Materials:

- *Experiment Analysis*

Facilitation Steps:

1. Have participants gather their experiments and make any final observations.
2. Have participants properly dispose of their dishes with bacteria. You may choose to clean and reuse the petri dishes if desired.
3. Have participants work in groups, individually, or as a class to answer the questions on the *Experiment Analysis*.

Name: _____ Class: _____

Experiment Analysis

Experiment Questions:

1. List the locations tested during the lab.
2. Describe the observations recorded for each day.
3. Identify any patterns or trends observed in the data.
4. Analyze the implications of the findings. What can be inferred about the potential risks of food contamination during processing?
5. Brainstorm possible reasons behind the observed contamination levels.

6. Discuss strategies to address or mitigate the identified contamination risks.

Summary and Conclusions:

7. Summarize the key findings and conclusions drawn from the data analysis.
8. Reflect on the significance of the findings and their impact on food safety during processing.
9. Consider the broader implications of the research and potential improvements in food processing practices to prevent foodborne illnesses.

Lesson Three – Transporting Food to a Regional Distribution Center

Lesson Overview

Use this lesson to help participants understand the cold chain process and its importance to the transportation of our food.

Lesson Objectives

After completing this lesson, participants will be able to:

- Understand the importance of temperature when handling perishable food
- Explain the main components of the cold chain process

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Whiteboard (1 per group) • Marker (1 per group) • Microfiber cloth (1 per group) • <i>Produce Optimum Temperature Chart</i>	1. Print/photocopy <i>Produce Optimum Temperature Chart</i> (one per participant). 2. Have whiteboards ready.	20 minutes
LEARN	• Whiteboard or flip chart • Markers • Handouts with five different cold chain scenarios (one copy per group) • Pen and paper for each group member • <i>Cold Change Scenarios – Think About It</i> • <i>Cold Change Scenarios</i> • <i>Cold Chain Process</i> slide presentation	1. Print/photocopy <i>Cold Change Scenarios- Think About It</i> (one per participant). 2. Print/photocopy <i>Cold Change Scenarios</i> (one per group). 3. Prepare <i>Cold Chain Process</i> slide presentation for viewing.	40 minutes
REVIEW	• Presentation materials (whiteboards, chart paper, computers) • <i>Cold Change Scenarios</i> • <i>Cold Change Scenarios – Think About It</i>	1. Obtain any presentation materials.	10 minutes

Lesson Three – Transporting Food to a Regional Distribution Center

FOCUS: How Should We Store That?

20 minutes

Purpose:

Participants will look at common food items and think about what the optimum storage temperature would be for common produce.

Materials:

- Whiteboard (1 per group)
- Marker (1 per group)
- Microfiber cloth (1 per group)
- *Produce Optimum Temperature Chart* (one per participant)

Facilitation Steps:

1. Ask participants why they think we refrigerate foods. As they respond, lead in a short discussion.
2. Divide the class into 5 small groups. Give each group a whiteboard, dry erase marker, and microfiber cloth.
3. Present the list of 8 fruits and vegetables. Have participants write the produce items down on their whiteboards.
4. Give them time to work together to write down their best guesses of what temperature they think is the optimum for storage.
5. Once they have thought through and written their best guesses, distribute the *Produce Optimum Temperature* chart.
6. Give them additional time to look over the temperatures and fill in the chart
7. Once they are finished, go over the correct answers as a class.
8. Optional: If time permits, share a brief video about the suitable storage temperature of fruits and vegetables.
<https://www.youtube.com/watch?v=GyhgTtn5sS8>

Name: _____ Class: _____

Produce Optimum Temperature Chart

Task: Match the storage temperatures to different fruits and vegetables. In this activity, you will have the opportunity to test your knowledge and understanding of proper storage temperatures for various produce items.

Vegetable/Fruit	Recommended Storage Temperature (°F)
Apples:	
Carrots:	
Lettuce:	
Tomatoes:	
Potatoes:	
Strawberries:	
Broccoli:	
Oranges:	

Temperatures:

12-15°C / 54-59°F

0-2°C / 32-35°F

0-4°C / 32-39°F

0-4°C / 32-39°F

7-10°C / 45-50°F

0-2°C / 32-35°F

4-7°C / 39-45°F

0-2°C / 32-35°F

Produce Optimum Temperature Chart – Answer Key

Let's go over the correct answers for each produce item:

Apples: 0-4°C / 32-39°F

Carrots: 0-4°C / 32-39°F

Lettuce: 0-2°C / 32-35°F

Tomatoes: 12-15°C / 54-59°F

Potatoes: 7-10°C / 45-50°F

Strawberries: 0-2°C / 32-35°F

Broccoli: 0-2°C / 32-35°F

Oranges: 4-7°C / 39-45°F

Discuss the importance of proper storage temperatures in maintaining the quality, freshness, and safety of fruits and vegetables. Emphasize how these temperature ranges help to slow down spoilage, preserve flavor, and extend shelf life.

Lesson Three – Transporting Food to a Regional Distribution Center

LEARN: Cold Chain Process

40 minutes

Purpose:

To educate participants about the cold chain process and enable them to analyze different cold chain scenarios in a group setting.

Materials:

- Whiteboards or flip charts
- Markers and microfiber cloths
- Handouts with different cold chain scenarios (one per group)
- Pen and paper for each group member
- *Cold Change Scenarios – Think About It* (one per participant)
- *Cold Change Scenarios* (one per group)
- *Cold Chain Process* slide presentation

Facilitation Steps:

1. Present a brief overview of the cold chain process. Use the *Cold Chain Process* slide presentation.
2. Share a brief video on the cold chain process. Here are a few recommended links with short overviews:
<https://www.youtube.com/watch?v=6N3qjr2MIYk>
<https://www.youtube.com/watch?v=CyIwn7qEoy0>
<https://www.youtube.com/watch?v=wGPo1kaQ-sc>

3. Divide participants into 5 small groups.
4. Distribute the worksheets with 12 different cold chain scenarios (one scenario per group). Instruct the groups to read and analyze their assigned scenarios.
5. Each group should discuss and answer the questions on the *Cold Change Scenarios – Think About It* worksheet.
6. Participants should think through their answers and write them out on their whiteboard with a diagram of the cold chain.

Name: _____ Class: _____

Cold Change Scenarios – Think About It

Task: Be able to analyze different cold chain scenarios in a group setting.

Read through the scenario assigned to you and your group members. After reading the scenario, discuss and answer the following questions:

1. What is the temperature-sensitive product involved in the scenario?
2. What are the critical temperature requirements for that product?
3. What potential issues or challenges might arise in maintaining the cold chain for this product?
4. How could these issues impact the quality and safety of the product?
5. What steps can be taken to ensure the integrity of the cold chain in this scenario?

Cold Change Scenarios

Scenario 1: Ice Cream Delivery

Your group is in charge of delivering ice cream from a manufacturing facility to various supermarkets. The ice cream must be kept frozen at -18°C throughout the supply chain. Analyze the potential issues that could arise in maintaining the cold chain for ice cream and propose solutions.

Scenario 2: Fresh Fruit Export

Your team is responsible for exporting fresh fruits to overseas markets. The fruits require a temperature range of 5°C to 10°C to maintain their quality. Discuss the possible complications during transportation and storage and suggest ways to ensure the cold chain remains intact.

Scenario 3: Seafood Export

You are involved in shipping seafood products, such as fish and shrimp, to international buyers. These products need to be kept chilled between 0°C and 4°C . Identify the potential difficulties in maintaining the cold chain for seafood and propose strategies to overcome them.

Scenario 4: Dairy Product Distribution

Your group is tasked with distributing dairy products, including milk and cheese, to local grocery stores. The products should be stored at a temperature below 4°C . Analyze the challenges that may arise in maintaining the cold chain for dairy products and recommend solutions.

Scenario 5: Fresh Seafood Import

Your team is involved in importing fresh seafood, such as lobsters and oysters, from international suppliers. The seafood must be kept chilled between 0°C and 4°C . Analyze the challenges in maintaining the cold chain during the import process and propose strategies to ensure the freshness and safety of the seafood.

Scenario 6: Frozen Dessert Manufacturing

You work in a frozen dessert manufacturing facility that produces ice cream and sorbets. The products need to be stored at a temperature below -18°C . Discuss the complexities involved in maintaining the cold chain during the manufacturing process and suggest measures to prevent temperature fluctuations.

Scenario 7: Delicate Chocolate Shipping

Your group is responsible for shipping delicate, handmade chocolates to customers worldwide. The chocolates must be kept at a temperature between 15°C and 20°C . Analyze the potential difficulties in maintaining the cold chain for delicate chocolates and propose solutions to prevent heat exposure and melting.

Scenario 8: Dairy Farm Milk Collection

You are involved in collecting fresh milk from dairy farms and transporting it to a processing facility. The milk needs to be kept at a temperature below 4°C. Identify the challenges in maintaining the cold chain during milk collection and propose measures to ensure the milk's freshness and quality.

Scenario 9: Salad Bar Display

Your team manages a salad bar in a cafeteria where various fresh ingredients are displayed. The salads should be kept chilled between 2°C and 5°C. Discuss the challenges in maintaining the cold chain for the salad bar display and propose strategies to prevent temperature abuse and ensure food safety.

Scenario 10: Bakery Product Delivery

You work for a bakery that delivers freshly baked bread and pastries to local cafes. The bakery products need to be transported at a temperature between 20°C and 25°C. Analyze the potential issues in maintaining the cold chain during bakery product delivery and propose solutions to preserve their quality and taste.

Scenario 11: Fresh Juice Processing

Your group operates a fresh juice processing facility that produces bottled juices from fruits and vegetables. The juices must be kept chilled between 2°C and 8°C. Examine the challenges involved in maintaining the cold chain during juice processing and bottling and propose measures to ensure product safety and freshness.

Scenario 12: Cold Brew Coffee Distribution

You are responsible for distributing cold brew coffee to grocery stores and cafes. The coffee needs to be stored and transported at a temperature between 2°C and 8°C. Discuss the challenges in maintaining the cold chain for cold brew coffee and propose strategies to prevent temperature fluctuations and preserve its quality.

Lesson Three – Transporting Food to a Regional Distribution Center

REVIEW: Scenario Analysis Presentations

10 minutes

Purpose:

Participants present what they have learned about the cold chain and how they analyzed their scenario.

3. Summarize the key takeaways from the group discussions. Recap the main points discussed during the lesson.

Materials:

- Presentation materials
 - Whiteboards
 - Chart paper
 - Computers
- *Cold Change Scenarios – Think About It* (one per participant)
- *Cold Change Scenarios* (one per group)

Facilitation Steps:

1. Invite each group to present their scenario analysis to the class.
2. After each presentation, encourage the class to ask questions and provide feedback. Facilitate a discussion on the common challenges and solution identified across the different scenarios.

Lesson Four – Shipping Produce to Local Retail Stores

Lesson Overview

Use this lesson to get participants to think through the ethical dilemmas producers face in the food industry in regards shipping, packaging, and pricing.

Lesson Objectives

After completing this lesson, participants will be able to:

- Evaluate multiple viewpoints of shipping, packaging, and pricing scenarios
- Identify the ethical dilemma in each scenario

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Sticky notes	1. Have sticky notes ready.	20 minutes
LEARN	• Shipping, Pricing, and Packaging Scenario Cards	1. Print/photocopy <i>Ethical Scenario Analysis</i> (one per participant). 2. Prepare Shipping, Pricing, and Packaging Scenario Cards.	45 minutes
REVIEW	• <i>Shipping, Pricing, Packaging Comparison</i>	1. Print/photocopy <i>Shipping, Pricing, Packaging Comparisons</i> (one per participant).	15 minutes

Lesson Four – Shipping Produce to Local Retail Stores

FOCUS: What Should We Do About That?

20 minutes

Purpose:

Participants will think about what an ethical dilemma is. They will notice how some responses will be similar and some different.

Materials:

- Sticky notes

Facilitation Steps:

1. Begin by asking participants to gather in a circle or sit in their desks facing the front of the classroom.
2. Distribute sticky notes and writing materials to each participant.
3. Explain to participants that ethical dilemmas often arise when we are faced with challenging decisions that involve conflicting values or principles.
4. Pose a thought-provoking question to participants, such as:
 - Imagine you found a wallet containing a significant amount of cash on the ground. What would you do?
 - If you saw a close friend cheating on an important exam, what would you do?
 - Suppose you were offered a job that paid exceptionally well but involved working for a company known for unethical practices. Would you accept the job?
5. Ask participants to take a few moments to reflect on the question silently.
6. Instruct participants to write their response or thoughts on the sticky notes, without sharing their answers with others.
7. Once participants have written their responses, collect the sticky notes.
8. Shuffle the sticky notes and redistribute them randomly among participants, making sure no one receives their own sticky notes.
9. Ask participants to read aloud the response they received on the sticky note, without revealing the writer.
10. Facilitate a brief discussion by asking questions, such as:
 - Did you receive a response like your own? If not, how does it differ?
 - What ethical considerations are involved in the scenario?
 - Are there any common themes or pattern emerging from the responses?
11. Conclude the activity by emphasizing the diversity of perspectives and the complexity of ethical decision-making.

Lesson Four – Shipping Produce to Local Retail Stores

LEARN: Shipping, Pricing, and Packaging Scenarios

45 minutes

Purpose:

Participants will analyze and discuss ethical dilemmas related to food packaging, pricing, and shipping and develop thoughtful responses to each scenario.

Materials:

- Shipping, Pricing, and Packaging Scenario Cards

Facilitation Steps:

1. Divide participants into small groups and distribute one scenario to each group. Instruct them to read and analyze their assigned scenario.

Encourage participants to reflect on the ethical issues presented in the scenario and consider the various perspectives and potential consequences involved.

They should also make note of the key points. In addition, they should think about ethical considerations, possible solutions, and potential impacts of each course of action.

2. Circulate among the groups, providing guidance and clarifying any questions that arise. After sufficient group discussion, bring the class together for a large group discussion.

3. Ask a few volunteers to share their responses with the class. Facilitate a discussion by asking follow-up questions to encourage critical thinking and deeper analysis.

Name: _____ Class: _____

Ethical Scenario Analysis

Task: Analyze a scenario that poses an ethical dilemma from multiple viewpoints. You should come up with a solution you see fit. Answer the following to help analyze the scenario given on your card:

Summarize the key points of the scenario:

Who might have a perspective in the scenario: (think customer, stores, factories, farmer, etc.)

What is the ethical concern in the scenario?

What are possible solutions? At least 2 should be shared. Support your arguments with logical reasoning and examples.

What are possible negative consequences of the solutions you came up with?

Lesson Four – Shipping Produce to Local Retail Stores

REVIEW: Common Dilemmas

15 minutes

Purpose:

Participants will compare shipping, packing, and pricing dilemmas faced in the food industry.

Materials:

- *Shipping, Pricing, and Packaging Comparison*

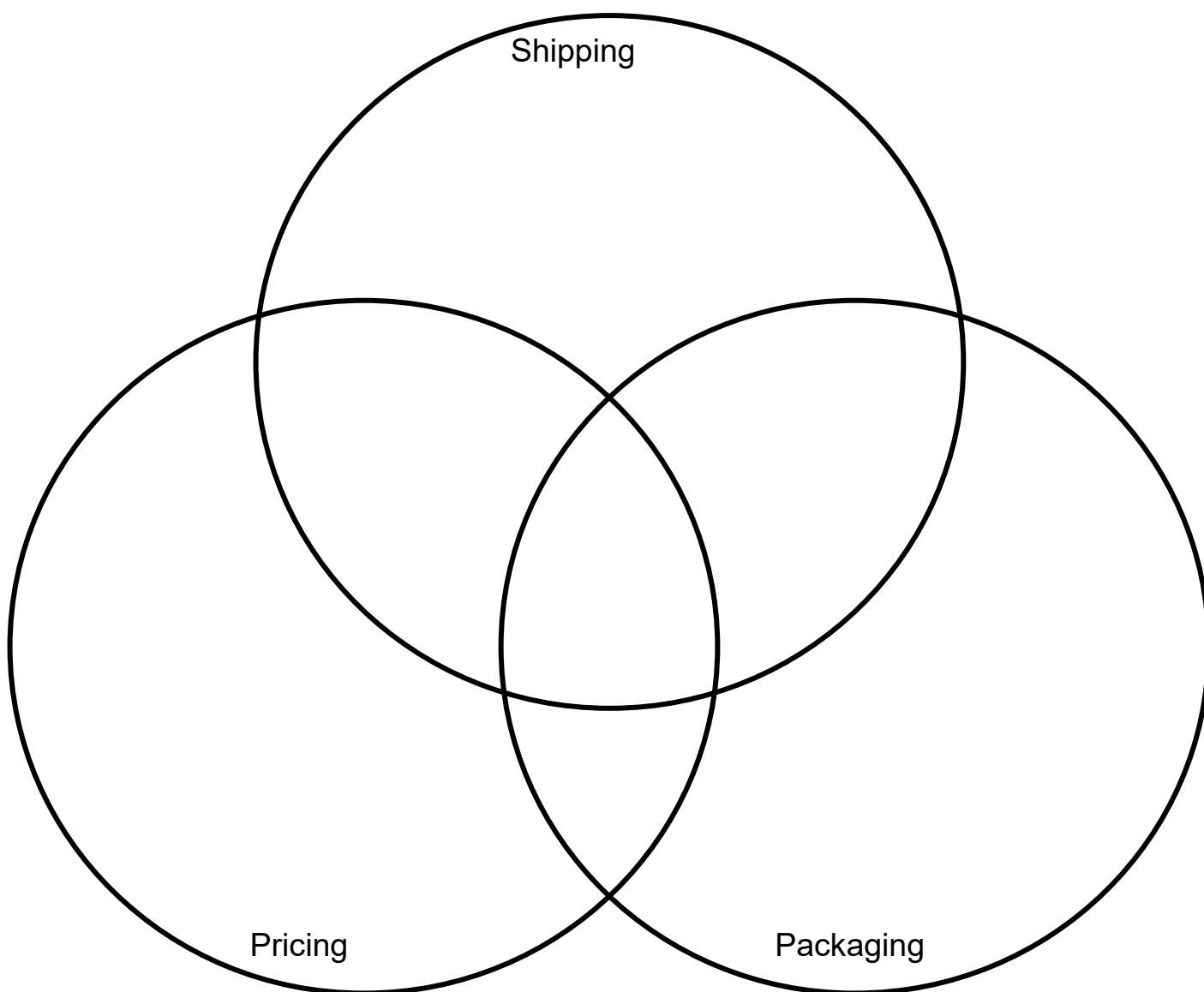
Facilitation Steps:

1. Have participants talk through the shipping, packaging, and then pricing scenarios they had.
2. Once they have thought about each have them, work on the diagram on the *Shipping, Pricing, Packaging Comparison* worksheet.
3. Finally, work together as a class to create one diagram on a large piece of poster paper or whiteboard.

Name: _____ Class: _____

Shipping, Pricing, and Packaging Comparison

Task: Compare and contrast problems and ethical dilemmas that arise between shipping, packaging, and pricing food. In spaces that overlap, you should write ideas that the overlapping topics have in common.



Lesson Five – Food Ending Up on Your Plate

Lesson Overview

Each kitchen lab or small group chooses a scenario card, which includes a scenario for planning a specific number of meals with specific financial or ingredient constraints.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify a restricting element of meal planning
- Budget and find recipes to help create a meal plan

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Timer or stopwatch • Large space, such as a classroom or designated area • Cards or pieces of paper with various ingredients written on them (e.g., chicken, rice, broccoli, tomatoes, beans, etc.) • Optional: Music player and energetic music • <i>Meal Plan and Budget</i>	1. Write various food/ingredients on small papers or index cards. 2. Hide the food cards around the room.	20 minutes
LEARN	• Meal Planning and Grocery Shopping Scenario Cards • Paper or digital devices for notetaking and brainstorming • Access to recipe websites, cookbooks, or cooking apps • Art supplies (optional, for those interested in adding a creative element to their projects) • <i>Meal Planning Project Evaluation</i>	1. Print/photocopy <i>Meal Plan Evaluations</i> (one per participant). 2. Prepare digital devices and any art supplies.	90 minutes
REVIEW	• <i>Farm to Fork</i> group activity sheets (5 pages) • Timer or stopwatch	1. Print/photocopy the 5 <i>Farm to Fork</i> group activity sheets.	15 minutes

Lesson Five – Food Ending Up on Your Plate

FOCUS: Budget-Friendly Ingredient Hunt

20 minutes

Purpose:

Participants will engage in an active and interactive exercise that encourages them to think creatively about meal planning under financial and dietary constraints.

Materials:

- Timer or stopwatch
- Large space, such as a classroom or designated area
- Cards or pieces of paper with various ingredients written on them (e.g., chicken, rice, broccoli, tomatoes, beans, etc.)
- *Meal Plan and Budget*
- Optional: Music player and energetic music

Facilitation Steps:

1. To prepare for the activity, write ingredients on pieces of paper and include the approximate retail price.
2. Divide participants into 4 teams and designate a starting point for each team on opposite sides of the space.
3. Scatter the ingredient cards randomly throughout the designated area.
4. Explain that each team will have 5 minutes to find as many ingredient cards as possible. Emphasize that the ingredients they collect will serve as the foundation for their budget-friendly meal plans.
Explain that grabbing as many ingredients as they can is not the point. Participants must decide as a group which will work for their planned meal.
Explain that as they begin grabbing cards, they should discuss what they want to use it for in a budget-friendly meal.

5. Start the timer and let participants begin the ingredient hunt. Encourage them to move quickly and work together as a team to locate the ingredient cards.
6. Optional: Play energetic music in the background to add to the excitement and energy of the activity.
7. Once the time is up, gather participants back together and lay out all the ingredient cards they have collected.
8. Each team should plan a meal using the ingredients they picked up and add more if recipes need them. They should figure out which 3 foods they wish to include in the meal, identify ingredients, cost of all ingredients added up, number of servings the recipe prepares, and the cost per serving
9. Engage the teams in a brief discussion about their experience during the activity. Ask questions, such as:
 - How did you decide which ingredients to prioritize?
 - Did you encounter any challenges in finding specific ingredients?
 - How do you think this activity relates to meal planning under financial and dietary constraints?
10. Conclude the activity by highlighting the importance of being resourceful, creative, and efficient in meal planning when working within constraints.

Meal Plan and Budget

Task: Using the ingredients you picked up in the activity, prepare a meal that includes all of those ingredients. If you need ingredients in addition to the ones you picked up, you will need to identify those also and research average retail price. Underline the ingredients you picked up for each food item in the chart below. Your meal should include 3 different foods.

Meal: _____

Food Item	Recipe/Ingredients	Cost to Prepare (how much is each ingredient)	# of Servings the Recipe Makes	Cost Per Serving (total cost to prepare/# servings)

Total Cost of One Serving of this meal: _____

Lesson Five – Food Ending Up on Your Plate

LEARN: Meal Planning Project

90 minutes

Purpose:

Engage participants in a practical and interactive activity that incorporates meal planning skills, budgeting, and creativity. By responding to various meal planning scenarios, participants will develop a deeper understanding of financial constraints and how to create cost-effective, nutritious meals.

Materials:

- Meal Planning and Grocery Shopping Scenario Cards
- Paper or digital devices for notetaking and brainstorming
- Access to recipe websites, cookbooks, or cooking apps
- Art supplies (optional, for those interested in adding a creative element to their projects)
- *Meal Planning Project Evaluation*

Facilitation Steps:

1. Divide participants into groups or allow them to work individually, depending on the class size and available resources. Assign each group or individual a Meal Planning and Grocery Shopping Scenario Card.
2. Provide time for participants to brainstorm and research recipe ideas and budgeting strategies based on their assigned scenario.

3. Encourage participants to consider nutritional balance, creativity, and cost-effectiveness of their meal plans.
4. Allow participants to present their meal planning projects to the class or small groups.
5. Ask each participant or group to explain their chosen recipes, ingredients, and budgeting techniques.
6. Encourage discussions among participants, allowing them to ask questions and provide feedback to their peers.
7. If desired, give participants an opportunity to showcase any creative elements they have added to their projects, such as handmade recipe cards or visual representations of their meal plans.
8. Facilitate a class discussion on the challenges and strategies encountered during the meal planning process. Discuss the importance of making healthy choices within financial constraints.
9. Evaluate projects using the *Meal Planning Project Rubric*.

Name: _____ Class: _____

Meal Planning

Project Evaluation

Criteria	Meets Expectations 10 points each	Short of Expectations 5 points each	Did Not Complete 0 points each
Understanding of Given Scenarios	Accurately understands and incorporates scenario details into the meal plan	Partially incorporates scenario details into the meal plan	Fails to incorporate scenario details into the meal plan
Creativity in Recipe Selection	Demonstrates originality and creativity in recipe choices	Shows some creativity in recipe choices	Lacks creativity in recipe choices
Incorporation of Budgeting Strategies	Effectively uses budgeting strategies to stay within the allocated budget	Attempts to use budgeting strategies but goes over the allocated budget	Fails to use budgeting strategies to stay within the allocated budget
Nutritional Balance	Achieves a well-balanced mix of macronutrients and considers dietary needs	Partially achieves nutritional balance and overlooks some dietary needs	Fails to achieve nutritional balance and ignores dietary needs
Effective Communication and Class Engagement	Clearly communicates ideas, actively engages in discussions, and provides constructive feedback to peers	Communicates ideas adequately but lacks active engagement or constructive feedback	Poor communication, disengaged, and does not provide constructive feedback
Self-Reflection and Learning	Reflects thoughtfully on the impact of financial constraints on food choices and demonstrates personal learning and growth	Shows some reflection on the impact of financial constraints, but lacks depth or personal insights	Lacks reflection on the impact of financial constraints and does not demonstrate personal learning or growth

Written Reflections	Provides well-written reflections that effectively express thoughts, challenges faced, strategies implemented, and lessons learned	Offers partially developed reflections with limited insight or clarity	Fails to provide written reflections or lacks coherence and substance
Group Discussions	Actively engages in group discussions, listens to others, and provides thoughtful feedback	Participates in discussions but lacks active engagement or constructive feedback	Rarely participates in discussions, does not listen to others, or provides unhelpful feedback
Overall Presentation	Presents the project with clarity, organization, and creativity, showcasing a visually appealing presentation	Presents with some clarity and organization, but lacks creativity or visual appeal	Presents with poor organization, lacks clarity, creativity, and visual appeal
Total points			

Total Points: _____ out of 90 possible
 _____ %

Lesson Five – Food Ending Up on Your Plate

REVIEW: Farm to Table Review Relay

15 minutes

Purpose:

Reinforce participants' understanding of key concepts related to meal planning, the cold chain, food processing, contamination, and impact of insects on the food supply.

Materials:

- *Farm to Fork* group activity sheets (5 pages)
- Timer or stopwatch

Facilitation Steps:

1. Divide participants into groups of 4-5 members. Ensure that each group has access to a table or workspace.
2. Distribute the *Farm to Fork* group activity sheets and explain that they have 2 minutes to discuss and write down as much information as they can about that concept on the sheet.
3. Start the timer and allow the groups to brainstorm and write down their ideas on the given concept.
4. After 2 minutes, instruct each group to pass their sheet to the next group clockwise.
5. Repeat the process, giving each new group 2 minutes to review the previous group's ideas and add their own thoughts to the sheet.
6. Continue passing the sheets clockwise until each group has reviewed and contributed to all five concepts (meal planning, the cold chain, food processing, contamination, and the impact of insects on the food supply).
7. Once all the sheets have made their way around, gather the groups together and engage in a review discussion. Use the following prompts to guide the discussion:
 - Ask each group to share the key points they have written down for the concept they received
 - Encourage other groups to add any additional information or insights they have for each concept
8. Facilitate a discussion in which groups can ask questions, clarify any misconceptions, or share examples related to each topic.

Production of Goods

Processing Agricultural Products

Transporting Food to a Regional Distribution Center

Shipping Produce to Local Retail Stores

Food Ending Up on Your Plate

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